

Notice of Allowability

Application No.

10/021,130

Examiner

Mark Ruthkosky

Applicant(s)

HAMAMOTO ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/2/2004.
2. ☒ The allowed claim(s) is/are 1,3-7 and 9-34.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/631,518.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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11/22/04

DETAILED ACTION

Claim Rejections - 35 USC § 102

The rejection of claims 1, 3, 7, 10, and 12 under 35 U.S.C. 102(b) as being anticipated by Yoshimitsu (US 4,888,255) has been overcome by the applicant's amendment.

Claim Rejections - 35 USC § 103

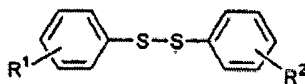
The rejection of claims 4, 5, 6 and 11 under 35 U.S.C. 103(a) as being unpatentable over Takami et al. (US 5,340,670) in view of Yoshimitsu (US 4,888,255) has been overcome by the applicant's amendment.

Allowable Subject Matter

Claims 1, 3-7 and 9-34 are allowed.

The following is an examiner's statement of reasons for allowance:

Instant claims 1 and 7 are to a non-aqueous secondary battery and an electrolytic solution for a battery wherein the electrolytic solution contains a substituted diphenyldisulfide derivative of a claimed formula wherein each of R¹ and R² is an alkoxy group having 1-6 carbon atoms in an amount of 0.01 to 5 weight percent based on the amount of electrolytic solution.



The prior art does not teach a non-aqueous secondary battery and an electrolytic solution for a battery wherein the electrolytic solution contains a substituted diphenyldisulfide derivative

of a claimed formula wherein each of R¹ and R² is an alkoxy group having 1-6 carbon atoms in an amount of 0.01 to 5 weight percent based on the amount of electrolytic solution.

The most pertinent prior art includes Yoshimitsu (US 4,888,255), which teaches a non-aqueous electrochemical cell. The cell contains an anode, a cathode, an electrolyte and a separator (see example 1.) Charging and discharge of the cell are noted throughout the patent (including col. 7, lines 1-20.) An aromatic compound is added to the electrolyte solution (col. 3, line 60) that may be diphenyl disulfide and derivatives thereof including halogens (see col. 4, lines 9-18.) The amount of aromatic compound is added in the amount of 0.01 mol/L (claims.) Solvent systems including propylene carbonate are noted in column 3. The reference does not teach a substituted diphenyldisulfide derivative of a claimed formula wherein each of R¹ and R² is an alkoxy group having 1-6 carbon atoms in an amount of 0.01 to 5 weight percent based on the amount of electrolytic solution.

Instant claims 13-34 are to a non-aqueous secondary battery and an electrolytic solution for a battery wherein the electrolytic solution contains a substituted diphenyldisulfide derivative of a claimed formula in an amount of 0.01 to 5 weight percent based on the amount of electrolytic solution. The electrolytic solution further contains a second additive as claimed in the independent claims, including methyl 2-propyl-carbonate, cyclohexylbenzene or bis(4-methoxyphenyl)disulfide. The most pertinent prior art has been applied. Yoshimitsu (US 4,888,255) teaches a non-aqueous electrochemical cell comprising an anode, a cathode, an electrolyte and a separator (see example 1.) An aromatic compound, such as diphenyl disulfide and derivatives, is added to the electrolyte solution (col. 3, line 60, col. 4, lines 9-18) in the amount of 0.01 mol/L (claims.) The prior art does not teach adding a second additive selected

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from the group consisting of methyl z-propylcarbonate, 2-propmyl methanesulfonate, 1,3-propanesultone, divinylsulfone, and 1,4-butanediol dimethanesulfonate in an amount of 0.01 to 10 weight percent based on the amount of electrolytic solution. Further, the prior art does not teach adding a second additive of cyclohexylbenzene in an amount of 0.01 to 5 weight percent based on the amount of electrolytic solution.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745

Mark Ruthkosky
11/22/04